THE GOLDEN NEMATODE
of potatoes and tomatoes

U.S. DEPARTMENT OF AGRICULTURE
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The golden nematode, a tiny eelworm, is one of the most damaging pests of potatoes.

It was found in the United States in 1941 on Long Island, New York, and, although contained there through a Federal and State program of plant pest control, remains a threat to this country's $800 million potato industry.

The golden nematode also attacks tomatoes and eggplants, but it is not considered a major pest of these plants.

DAMAGE

The golden nematode bores into the roots of potatoes and feeds on their juices. Because nematodes do not cause immediate damage to the aboveground part of an infested plant, they often go undetected for years.

Poor growth of plants in one or more small spots of a potato field is usually the first sign of an infestation. As the infestation builds up, the spot becomes larger and new damaged areas appear. Eventually the entire field shows poor growth.

Heavy infestations cause wilting (particularly at midday during dry weather), stunted growth, poor root development, and early plant death.

DEVELOPMENT

The golden nematode has three stages in its life cycle—egg, larva, and adult. The cycle takes 38 to 48 days.

The eggs are enclosed in protective flask-shaped cysts—which are the dead, swollen bodies of the females. The cysts are smaller than a pinhead, and each of them contains up to 500 eggs and larvae.

The eggs remain dormant in soil until stimulated to hatch by a chemical released from the roots of host plants. The larvae then migrate to the roots and enter them. In the absence of host plants, the eggs can remain dormant for many years.

WHAT WE DO

Your Federal and State departments of agriculture cooperate in a nematode control program—an organized effort to prevent the spread of the golden nematode and to eventually eradicate it. Work under the program is of three kinds: survey, quarantine, and control.

Survey

Plant pest control workers inspect soil samples collected from potato fields and potato-grading stations. Surveys are conducted to detect new areas of infestation and to determine the limits of known infestations.

All potato fields on Long Island are surveyed. Potato fields in other areas of the country also are surveyed, but not as intensively as are those on Long Island.

These nationwide surveys show that the golden nematode is being contained on Long Island.

THE GOLDEN NEMATODE

Background shows normal potato plant (left) and one exposed to heavy nematode attacks.

Greatly magnified portion of infested root:

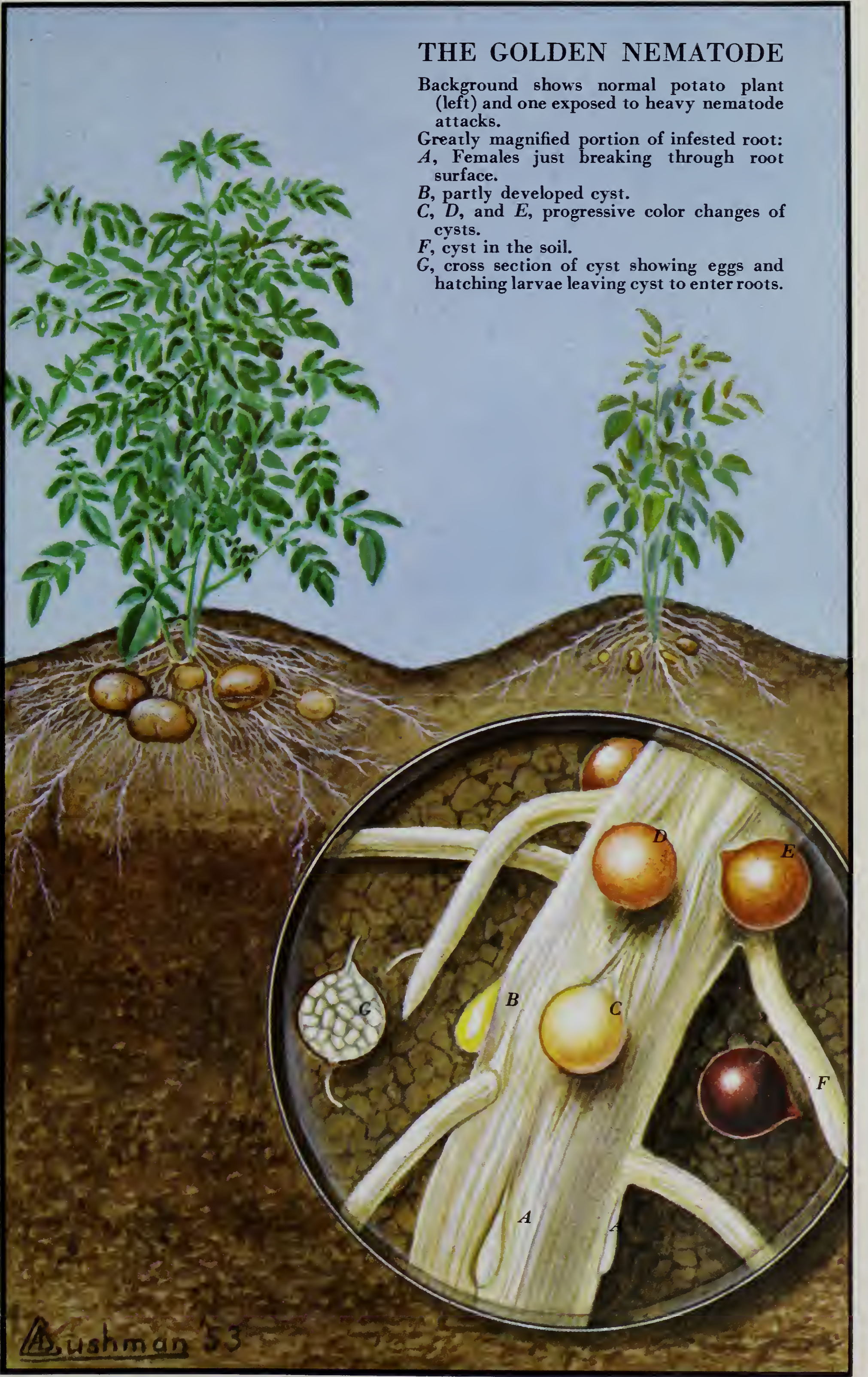
A, Females just breaking through root surface.

B, partly developed cyst.

C, *D*, and *E*, progressive color changes of cysts.

F, cyst in the soil.

G, cross section of cyst showing eggs and hatching larvae leaving cyst to enter roots.



Quarantine

Quarantine inspectors are on the lookout for nematodes in soil, burlap bags, and packing straw that arrives in shipments from foreign countries.

New York regulations restrict the marketing of potatoes, nursery stock, topsoil, and root crops grown on infested or exposed land on Long Island.

Control

Soil fumigation and the development of nematode-resistant potatoes are the two ways that we are fighting the golden nematode on Long Island.

Soil Fumigation

Infested fields are treated with dichloropropane-dichloropropene mixture. The fumigant is applied by Federal and State plant pest control workers.

Resistant Varieties

The U.S. Department of Agriculture and Cornell University are developing nematode-resistant varieties of potatoes.

Cornell has released Peconic, a new variety that is resistant to the golden nematode. Seed potato growers are increasing the supply of Peconic planting stock for use by Long Island farmers. The new variety is comparable to Long Island's popular Katahdin. Both varieties average more than 400 sacks per acre.

USDA scientists are conducting advanced field tests on several unnamed resistant strains. The most promising of these, also comparable to Katahdin, is resistant to virus X, scab, and late blight, as well as to the golden nematode.

HOW YOU CAN HELP

You can help prevent the spread of the golden nematode if you—

- Do not use secondhand containers such as burlap bags, crates, and barrels, when harvesting potatoes.
- Do not bring used machinery on a farm unless it has been steam-cleaned or fumigated.
- Do not spread grader soil and debris from community graders onto farm lands.
- Do not grow potatoes or other host crops on infested fields.
- Plant only certified seed.
- Rotate crops on potato land, but do not include tomatoes or eggplants in the rotation.

Prepared by
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